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ABSTRACT

The concept of the physician's assistant has become a topic of heightened concern and discussion as illustrated by the papers in this publication which reflect the interests of government, allied medical educators, and organized medicine in developing the concept as a new health manpower resource. Papers are: (1) "The Research and Development Approach to Health Manpower" by P. J. Sanazaro, (2) "Physician Support Personnel: Economic Implications" by C. N. Theodore, (3) "New Manpower Applications: Developmental Problems" by T. F. Zimmerman, (4) "Production Resources: Implications for Education Settings" by J. W. Perry, (5) "Guidelines for Development of New Health Occupations" by T. C. Points, (6) "Development of Physician Support Personnel: Manpower Utilization" by D. R. Howard, (7) "Allied Health Workers in Pediatric Practice" by J. P. Connelly, (8) "Health Manpower Programs: Santa Clara County Medical Society" by J. Donovan, (9) "The Allied Health Professional" by J. Hamburg, (10) "MEDEX: A New Manpower Resource" by R. A. Smith, and (11) pThe Anesthesia Technologist" by J. E. Steinhaus. (SB)

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Physician Support Personnel in the 70's: New Concepts

American Medical Association

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Physician Support Personnel in the 70's: New Concepts

Edited by
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Research and Development

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AMERICAN MEDICAL ASSOCIATION
Chicago, 1971

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FOREWORD

Apparently the idea of the physician's assistant is a concept for which the time has come. The development of the idea is moving strongly on many fronts, in many sectors of American medicine.

Admittedly, the development of the concept faces many obstacles, but it also presents some encouraging possibilities. One of these possibilities is that properly trained assistants will enable many overworked physicians to broaden their capabilities, so that they will be able to bring the benefits of their expertise to an increasing number of patients.

The Center for Health Services Research and Development is pleased to make available this compilation of papers from an Informational Conference on Physician Support Personnel, sponsored by the AMA Council on Health Manpower in Chicago in March, 1970. The speakers who participated in this Conference expressed viewpoints based on working experience in programs directed toward training physicians' assistants. As these speakers spelled out in the papers presented in this book, the developing training programs have raised questions in the areas of legislation, liability insurance, certification, patient and physician acceptance, and educational mobility.

If this developing concept and national trend is to attain its potential value to the Nation, it will need the leadership and guidance of the officers and members of the American Medical Association, and of state, county, and city medical societies.

Chris N. Theodore, Director
Center for Health Services
Research and Development
American Medical Association

INTRODUCTION

The concept of the physician's assistant has become a topic of heightened concern and discussion in many quarters – professional, consumer and governmental. The tempo of activity in this area has been attributed to the alleged "crisis" in providing adequate medical care for the population and the acknowledged shortage of professional health manpower. Efforts to cope with the problems associated with the shortage have increasingly focused on the potential for increasing productivity of the physician through a more rational allocation of tasks and a downward transfer of functions. Hence, the talk of a new member of the health team who could serve to extend physicians' services. Although the concept of a physician's assistant is not new, the formal training of such a worker, responsible to a physician, to function in an expanded role as his assistant in the diagnostic and therapeutic management of patients is relatively new.

The papers included in this report were presented at the first national Information Conference on Physician Support Personnel, sponsored by the Committee on Emerging Health Manpower of the AMA Council on Health Manpower in March, 1970. Officers and members of the Committee at the time of the conference were Thomas C. Points, M.D., Chairman; Harold F. Falls, M.D., Vice-Chairman; John B. Dillon, M.D.; John M. Rumsey M.D.; and Maynard I. Shapiro, M.D. Chairman of the Council was Dwight L. Wilbur, M.D.

These papers reflect the interests of government and allied medical educators as well as organized medicine in developing the concept of the physician's assistant as a new health manpower resource; the ideas presented therein do not necessarily represent the policy of the American Medical Association. However, we believe many of them will continue to influence innovations in this field for years to come; thus, we hope the reader will find this material informative and valuable as a resource document.

The Department of Health Manpower wishes to express its sincere appreciation to the authors and conference participants who gave of their time and talent in contributing to this conference.

Donald F. Foy, Director
Department of Health Manpower
American Medical Association

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THE RESEARCH AND DEVELOPMENT APPROACH TO HEALTH MANPOWER

Paul J. Sanazaro, M.D., Director
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If current economic and technological resources were properly allocated in the United States, all citizens could be provided access to the appropriate level of health care. There are, however, several major barriers to the early attainment of this public policy goal. First, it is clear that existing manpower resources are inadequate. Second, the health professions individually and in various combinations cannot yet take advantage of technology and "organization" to increase their productivity. Third, suitable methods for financing the health care of all citizens have yet to be devised. These problems constitute high priorities for the National Center's research and development in health services.

A further hindrance to rapid progress in providing an equitable allocation of resources, is the competition for public and private funds by other high-priority national problems. In this competition, priority choices in the health field are especially limited by lack of information on the effectiveness of current programs or their alternatives.

The most vexing problem to be faced is the shortage of physicians, a shortage which will continue through most of the 1970's. The only available alternative is the training and supervised deployment of "physician substitutes" to perform specific duties which do not require full medical education. (Physician substitute is used as a generic term describing a laboratory model in the area of research

under discussion. It is *not* proposed as a label or title.) The feasibility of relying upon suitably trained substitutes for clearly defined tasks has been provisionally demonstrated by organized projects and in selective instances in private practice.

Even though the volume of physician services can be substantially increased by this means, we must recognize that an increase in manpower alone will not solve the national problem. A parallel effort to assist the professions in organizing health services on a community basis is equally necessary. This would ensure that a common core of health care is available for ambulatory patients and accessible to the population of the entire community.

The greater portion of people seeking medical attention have problems which can be treated without hospitalization. Also, the greatest deficits in health services are in the inner-cities or in rural areas, and any plan to create large numbers of physician substitutes must also assure deployment in these areas.

Federal support of a rapid expansion of health manpower would be justified primarily by planned overcompensation for present deficiencies. Many areas of the country which are economically self-sufficient also lack adequate access to medical service, and there is little question that these, too, are entitled to the benefits available. But the major efforts must be in the areas of greatest need. It is the view of the National Center that health services can be improved for a substantial proportion of the population by a balanced program which combines three essential elements: (1) training and supervised deployment of physician substitutes, (2) establishing new types of comprehensive ambulatory care centers, and (3) installing improved methods of financing care on a community wide basis. This communication is concerned with health manpower, but manpower alone will do little to correct maldistribution in availability, to attract private capital, or to improve the organization of ambulatory care.

Five major organizations have now issued position statements on the manpower situation. These are the American Medical Association Committee on Emerging Manpower, the Board on Medicine of the National Academy of Sciences, the Association of American Medical Colleges, the American Society of Internal Medicine, and the American Academy of Pediatrics. The American Academy of General Practice is also actively interested in this field. In these communications, there is agreement on some of the issues, others stand out as matters of disagreement, and others reflect some common uncertainties. Of prime importance is the fact that the strong and positive leadership of organized medicine, the medical societies, clinics, and individual physicians are rising to the challenge of developing new types of manpower to meet the demands.

These various position statements generally recognize three levels of function which can be loosely categorized as "associate"

level; "assistant" level; and "aide." The distinctions are based on the particular skills and training required, the scope or specificity of functions to be performed, and the degree of independence allowed under continuing supervision. The reports recognize the desirability of conjuring up a better term than Physicians Assistant, and at present, "Medex" is the most original and apt title.

All agree that the physician must retain ultimate responsibility for the performance of his subordinates. Three levels of supervision are also referred to, namely, (1) over the shoulder; (2) on the premises; and (3) remote with monitoring. The question of supervision is central and must be examined in relation to specific situations; but regardless of the nature of supervision, it is evident that continuing objective evaluation of performance will be necessary to assure maintenance of standards and efficiency.

There is no discernible trend or agreement on several issues. The ultimate form that licensure will take is an open question in all the statements, although its importance for career development and public protection is recognized. Another point of divergence is the content and duration of training. It is observed that the content of the stronger innovative programs has been developed from task analyses rather than from professional judgments. How to balance didactic and clinical experience is as yet unresolved, and procedures for quality control which are intrinsic to medical education appear to be the most appropriate mechanisms for physician substitute training programs.

The reports substantially endorse allowing the advanced standing and credit for demonstrated competence. Also, they recognize the importance of developing more precise tests of competence by which to determine the optimum length of training.

A subject of special and continuous study needs to be the respective roles of the physician substitute and the physician when they begin to share the patient-physician relationships. The various communications agree that physician substitutes should function where the physician's services are performed; that is, primarily in the office, clinic, or emergency room, but opinion differs regarding their utility in the hospital setting. In the National Center, because of our emphasis upon equity of access for medically disadvantaged persons, we look especially to the deployment of the physician substitutes in primary care settings, including pediatric and emergency care, whether provided in community ambulatory patient centers, hospital outpatient departments, or emergency rooms.

Proper assessment and patient acceptance are fundamental aspects of this innovation. It is generally recognized that these can be quite complete if the physician substitute operates as part of a continuous and organized program of health care, where his perfor-

mance is monitored in depth and extent proportional to the degree of task delegation.

Some of the position statements assume that these innovative approaches to manpower utilization will increase physician productivity and contain the rising costs of care. Cost-productivity relationships remain to be demonstrated. These should be studied in different settings with a variety of staffing patterns.

The preceding remarks have suggested the range and complexity of the issues which surround the training and deployment of physician's substitutes. Such a major and highly significant departure from the traditional form of medical care in the United States cannot be treated casually. The commitment to this new field must be direct and substantial if it is to insure increased care to those who require it throughout our country. Information on critical elements of the undertaking is still limited, and no one can anticipate the nature of medical care in this country which incorporates large numbers of physician substitutes. *For these reasons, it is the view of the National Center that the initial commitment to this innovation should take the form of a large-scale, five-year demonstration.*

Because the alternative of rapidly expanding physician output within the decade simply does not exist, and because the results of Titles XVIII and XIX have highlighted the necessity to take action, reliance on physician substitutes is mandatory as an interim measure. Within five years, substantial data, measurements, observations, and professional experience will permit studies on the pertinent questions and enable policymakers to decide whether to continue, expand, reduce, or terminate the experiment.

Of the innovative approaches to expanding physician services already established, it is the view of the National Center that the pediatric nurse associate (PNA) is the most advanced. A total of 12 programs either exist or are being developed; so far these efforts have produced approximately 200 PNAs. The American Academy of Pediatrics has established guidelines for the training and utilization of PNAs and evaluative studies have shown their capability for productivity, effectiveness, and public acceptance.

Pediatric Nurse Associate trainees have been recruited from the ranks of registered nurses. Like physicians, these are what were already in short supply. The emphasis, however, is on training inactive nurses or those already employed by pediatricians, and this minimizes the drain on the active pool. The number of inactive but eligible registered nurses is at least 500,000.

If funds become available to train up to 15,000 PNAs by 1975, an estimated 8,000 to 12,000 would be employed by that time, and this would represent the ratio of roughly one PNA for every two pediatricians in the United States.

Large-scale production of PNAs is now feasible and desirable, but with modified targets. The National Center proposes a careful

prospective evaluation on the basis of physician satisfaction, patient acceptance, occupational persistence of trainees, and conventional measures of educational attainment. A national protocol will be used for follow-up, utilization, and economic studies.

Another major innovation in the use of physician substitutes, also in the associate category, is the returning corpsmen who have been certified for independent duty. Experience with this group is limited and the results of experience to date are provisional, but the outlook is optimistic.

During the next five years, it would be highly desirable to plan for a large number of retrained corpsmen operating in critical shortage areas, within the United States. However, apart from the formidable problems of organizing such a program, only carefully controlled and assessed large-scale demonstrations are feasible. These demonstrations are justified in those states where medical leadership and educational resources can provide quality control in all aspects. Prospective evaluation should be made by developing a method for national certification of competency, assessing employer satisfaction, patient acceptance, and accumulating data on cost, income, and payment. The control of the program support should be such as to regulate production until final decisions are made regarding the stability and the future of this innovation.

Beyond these two categories, at the associate level, the National Center believes that there are, as yet, no clear cut directions with respect to the large scale promotion and evaluation of physician substitutes. While the case has been argued persuasively for expanded support of training programs to produce midwives, experience is limited and the large number of unresolved questions require further study by the concerned professions.

Similarly, there remain many unanswered questions with respect to the other types of physician assistants who have to be trained for a specific specialty with highly limited duties. The National Center encourages the support of perhaps a dozen college-based physician assistant training programs, which will permit important studies of the preparation, role, and specialty options of physician assistants, as well as related social and economic factors. At the end of the five-year national demonstration of physician substitutes in practice, these college-based programs could either be expanded in accordance with accumulated data, or phased out if the new role has not established itself in our American system of health care delivery.

In conclusion, the National Center will concentrate its evaluation on the contribution physician substitutes make towards increasing care for those groups most urgently in need. As experience accumulates on the successful applications of this approach, the National Center intends to apply this knowledge in its priority

research and development programs in developing locally determined systems of ambulatory care.

The National Center has proposed substantial extension of current innovations with PNAs and independent duty corpsmen as a carefully controlled and evaluated five-year national demonstration. At the end of that five years, the accumulated information and experience will provide a basis for deciding whether to continue, modify, or terminate this experiment in medical care.

The National Center looks with great interest upon the impressive innovations in the use of physician substitutes, which make possible a deliberate and significant expansion of primary care. Most significant of all is the sponsorship and leadership shown by the medical profession in this new approach to improving the delivery of care.

PHYSICIAN SUPPORT PERSONNEL – ECONOMIC IMPLICATIONS

Chris N. Theodore, M.A., Director
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As accelerated demand continues to outstrip the supply of services in the 1970's, American medicine is confronted by two problems: (1) how to increase the availability of services, and (2) how to contain the rising prices. It has been suggested recently that the introduction of physician's assistants on a massive scale will help to solve the imbalance of supply and demand by first, increasing the number of personnel and second, expanding the efficiency of existing manpower. It is necessary to do both to meet the challenge of the 1970's.

When physicians recognize that they may increase their productivity and their number of patients through the utilization of assistants, additional demand for support personnel will be created. To those who doubt this concept, we need merely point out that it is not new in American medicine. Its prototype existed in many individual practices long before the formal establishment of physician's assistant programs. The nurse assistant, particularly in rural practice, is an example.

In the final analysis, the concept will be accepted or rejected in the arenas of patient satisfaction and professional evaluation. Market forces influence the extent to which various supply elements

are utilized in the production function, and as Victor Fuchs, PhD, of the National Bureau of Economic Research points out[1] :

> There has already been a large increase in the number of nonphysicians involved in producing medical care. At the beginning of this century, two out of every three persons in this industry were physicians. Now the ratio is less than one in ten.

What has happened is that some of the support personnel are now performing tasks once carried out by physicians. There are also new duties associated with new medical, diagnostic, and therapeutic techniques to occupy such aides. Today, the physician would not think of doing these tasks himself, and to this extent aides have become indispensable "complements" to the physician in his production of medical services.

Proponents of the physician's assistant concept say that physicians will delegate complete segments of the activities they now perform to the physician's assistants. In this sense the physician's assistant transcends the idea of a complement and embraces the concept of a substitute for specific services. Nevertheless, there may be some doubt as to the validity of calling these personnel substitutes when they must be overseen by the physician.

With the exception of interns and residents, physicians are subject to peer review, not direct supervision of professional activities, and, more important, the service of the physician's assistant is not the same as the service of the physician. It lacks the professional acumen of the physician. But regardless of these definitional problems, the introduction of the physician's assistant has useful economic implications.

On a general basis, the introduction of additional manpower will increase the supply of services and decrease or stabilize fees charged by the providers of such services. Other things being equal, this will be the immediate short-range effect. But it is also necessary to explore the long-range implications, because in the market, short-range and long-range adjustments are not always the same. Since allied health personnel will enter as additional suppliers of certain medical services, they will benefit both the patients and the providers, by increasing the services available, and at the same time helping to curb the overall rise in prices charged for those services.

However, it is difficult to assure that the overall price of the new services will be less than that of the services rendered by the physician. Under a perfectly competitive economic model one could expect the prices for services of substitutes (here the less-trained physician's assistant) would be lower than prices charged by traditional providers. But, given that today's health services market does not follow the guidelines of the perfectly competitive model, the physician's assistant is a complement. He functions under the supervision of the physician. He is not highly trained, nor is he subject to malpractice suits. Therefore, is it reasonable to assume that the

physician's assistant will become a competitor or substitute in the 1970's?

Second, what incentives will persuade the present providers of health services to employ the physician's assistant? Would physicians translate increased productivity into increased income, increased leisure time for themselves, or increased services to their patients without increased personal benefits?

Also, what about the increase in overhead which will result from the employment of additional assistants? Besides the salary paid to the physician's assistant, the firm will incur additional labor and administrative costs for the complementary services required by the physician's assistant. Will the increase in productivity offset increased costs?

Finally, there is the desire to maintain a sense that those services rendered by the physician's assistant are not of lesser quality than if those same services were performed by the physician himself. Since consumers tend to equate price and quality, is it not true that parity in price must be maintained to assure survival of the new manpower resource?

In spite of these uncertainties concerning the price of services, it is probable that the average rate of increase in the unit prices or fees charged by the physician will be tempered in the long run due to the innovation of physician's assistants. Under most conditions this may result in real savings to the consumer. With the introduction of the physician's assistant, the physician will be free to perform more of the complex medical procedures for which he is trained, leaving the simple tasks to the assistant. Under these circumstances he could work the same number of hours and realize a higher income.

As the stature of the physician enlarges along with his income, the demand for a medical career will increase. For this reason the medical school curriculum should be reformed to permit a more liberal entry. It has been stated that the average cost of educating a physician exceeds $100,000.[1] By contrast, a physician's assistant can be educated for less than $15,000. But these estimates should not be accepted as the cost of producing additional medical manpower. Given the current medical school capacity, only the marginal cost of production, namely, the cost of educating an additional medical graduate, must be considered. Walter C. Bornemeier, MD, and other AMA officials have addressed themselves to the desirability of shortening the medical school curriculum. Such action will cut the average cost of medical education for every student and result in a marginal cost far less than the present average cost figures that have been quoted. It is important that medical schools now assess the marginal costs of producing additional physicians when as many as 10,000 applicants are being refused admission each year.

Although the development of the physician's assistant may partially alleviate some of the acute pressures, it will not alone solve the chronic problems of the industry. This implies added concern for the future. The introduction of additional personnel will relieve the immediate situation, but will not solve the problems of rising prices and growing demand to enter medical school. The program may ease the supply-demand imbalance, but education of more physicians will still be required for the solution of the fundamental problem.

We cannot permit medical education to relax its efforts to expand the number of physicians because of the mere presence of physician's assistant programs.

Reference:

1. Fuchs VR: Can the traditional practice of medicine survive? *Arch Intern Med* **125**: 154-156, 1970.

NEW MANPOWER APPLICATIONS:
Developmental Problems

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Attempts to develop manpower solutions for current and expected future health demands, fall within three broad categories: those solutions which stress better utilization of existing manpower, those that focus upon increased numerical production of the traditional providers of health care, and those that seek the solution through development of new manpower applications. The recent activity and expansion in the health care industry has necessitated the development of each of these solutions, especially new manpower applications, which are an apparent response to several motivating factors. The expanding technologies of the medical specialties have opened completely new areas which demand staffing, and the problems associated with physician distribution have led to attempts to amplify and extend services through new personnel. With the emphasis upon employment opportunities, attempts have been made to connect those without jobs to the jobs without people, while new personnel have been introduced into the health industry as "change agents," intended by design and presence to alter the nature of the service being provided.

The tasks of developing and introducing a new category of personnel are exceedingly complex and require careful examination before production projects are undertaken. The main issues under discussion are problems of project planning and organization, prob-

lems of the health industry as they relate to new manpower, and problems associated with evaluation.

In planning and organizing a new manpower application, it is well to be aware of the critical procedural issues. A system of effort is required which integrates the following component activities.

First, a group of specific tasks must be identified. This requires careful analysis and participation by those responsible for the activity. In the case of new health personnel, involvement of the practicing physician is vital. He is familiar with the industry and will be the major utilizer of new personnel. The product of this effort is a job description, which can be facilitated by techniques of functional task analysis.

Second, appropriate manpower sources which theoretically would offer an adequate human resource supply must be identified. It is important that the characteristics of such potential resources are matched to the work to be done.

Third, staff must be developed to provide the training for new personnel. The training staff has three important responsiblities: a) the translation of a functional job description into terminal behavioral objectives, b) the design of a relevant curriculum, and c) the acquisition and organization of instructional media.

Fourth, space, equipment and support materials must be developed for both training and work settings.

Fifth, an informational program must be organized which will generate understanding among colleagues, patients, physicians and the general public.

And sixth, a plan to evaluate the efficacy of the innovation must be developed.

These are the major elements which go into any innovative project, and there are many additional problems dealing with the substance of the health industry. A group of consultants, selected to represent practicing physicians, allied health educators, junior colleges, the large urban medical centers, hospitals and nursing, were asked to identify the critical issues involved in producing and utilizing new physician support personnel. It was found that one of the basic problems is the determination of duties, functions, and responsibilities which can be delegated by the physician. Frequently, the approach has been for the educator to develop a curriculum prior to understanding clearly the need of the practicing physician. A more effective approach would be for practitioners first to collaborate with the educators involved on matters of job description and task delegation. Also to be determined, is the relative advantage of innovative measures over better utilization and role expansion of existing occupations, and the need for a generalist and/or specialist approach to physician support personnel.

Geographic, educational and career settings must be discussed in conjunction with determination of meaningful career potential, for it is essential that people are trained only for jobs that exist.

The whole question of a remuneration system and health-care costs must be examined: how the new personnel will be paid, and from which source. The legal implications, both civil and criminal, in utilizing new personnel and the need for careful articulation and supervision, are particularly significant factors in the present context of soaring costs of malpractice insurance paid by physicians. The physician incurs increased risk by using such personnel, for it is well established that an employer-physician is liable for injury caused by negligence of his employee, even if the employee is another physician. At the same time, the Medical Practice Acts are broad enough to permit the use of new support personnel. The tradition of medical practice is one of steadily expanding nurse function. Without opposition, nurses are doing today procedures which would have been shocking to the medical profession ten years ago. There is need for developmental work in legal areas to support the position in utilizing new manpower innovations.

Another important issue to be determined is the anticipated degree of consumer acceptance. The American Academy of Pediatrics' program, and the MEDEX program in Washington, are doing exploratory work in these areas, and many of the medical specialty groups are directing their activities to determine consumer acceptance. This is a critical issue at a time when consumer involvement is strongly emphasized.

Finally, it is important that the experience of innovative projects be carefully documented and that their products be systematically evaluated. The results should be applicable to the progressive spectrum of the work force, the outstanding calibre of the program candidates should not be the reason for the program's success. When making an evaluation, care should be taken to ensure that the procedure is implemented in the typical setting without the benefit of exceptional leadership, and that the findings are generalized to problems across the country rather than confined to local characteristics.

The intent of this discussion has been to demonstrate the procedural and substantive complexity of experimentation with new physician support personnel. It is a field of effort that holds much promise for the health manpower dilemma, but such effort may require some time before these important developmental problems and issues can be successfully resolved.

PRODUCTION RESOURCES:
Implications for Educational Settings

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> *"If a man does not keep pace with his companions, perhaps it is because he hears a different drummer. Let him step to the music which he hears, however measured or far away."*
> (Henry David Thoreau)

The American Medical Association's Council on Health Manpower has sounded a most propitious roll of drums heralding the entrance of physician's assistants into the health care industry. Those involved in health education are noticing a change in educational institutions at all levels as attempts are being made to create new administrative structures for the allied health professions and to develop and implement new educational programs for existing and emerging health occupations.

Over 70 institutions of higher education have created divisions, departments, schools or colleges for bringing the allied health professions together into new forms of educational structure. In addition, hundreds of community colleges have devoted priority attention to the initiation of associate degree, two-year programs for allied health technologies. These program developments in allied health are significant innovations in health education. Attempts are being made to strengthen the role of allied health practitioners in health care delivery systems.

Though these allied health educational programs at all levels are dedicated to the preparation of professional and technical

manpower, this report is limited to the new educational programs for support personnel, which are commonly known as "physician's assistant" programs. ("Physician's assistant" is used as a generic term to cover all of the new programs under discussion.)

The present availability of health manpower to deliver the level of health services demanded by society is woefully inadequate, both in quality and quantity. Everyone concerned with health manpower production has been willing to agree on this inadequacy, but predictions and projections of just how many more physicians, dentists, nurses and allied health personnel are needed have become the "crystal ball" game of the decade.

Creating a new health occupation carries a responsibility which education and the appropriate medical specialty must share. Each year that responsibility becomes more acute as new programs are begun and more health fields delineated and established. The patient is the one who must ultimately be affected by these programs, and the patient will be the judge of services rendered by these new members of the health team.

One of the major challenges to the creation of a new occupation is the development of a thorough job description based upon a comprehensive job analysis. Heretofore, much time and energy has been expended on developing the curricula for physician's assistant programs already in operation, and relatively little time has been given to careful analysis of how the product of the program is to be utilized. Historically, this has been a major problem in the development of allied health professions. Job duties and occupational roles have not been defined to clearly spell out the relationship between the role of the allied health professional and the related health occupations or service area. This can be done only upon the basis of a job analysis, and until a thorough, painstaking study of the occupational function is made, it will be impossible to develop a curriculum with maximum effectiveness. The level of occupational analysis which gives minute attention to definition of role and function, demands the time and efforts of job analysis specialists. Needless to say, developing a curriculum before the role has been defined is placing the cart before the horse, and the product of such a curriculum will probably show it.

Another point of consideration in the development of any new health program is the relationship of the assigned occupational role to the total spectrum of health care delivery. There are those who declare, as did Walter Reuther in 1968, that "We must free ourselves of the illusion that we really have a health care system in America. What we have, in fact, is a disorganized, disjointed, antiquated, obsolete nonsystem of health care." However, concerted efforts are being made to provide a more effective system that might alleviate the manpower problem.

Certainly, there is some justification for the position that

manpower shortages are so acute that there just is not enough time to communicate with the entire health team about the specific needs of an individual group. An effort to communicate with other health professionals and bring the expertise of other health groups into assisting with the planning of these new programs will reap real dividends in the long run, when attempts are made to integrate these new health workers into the fabric of the health care delivery system. But negative cries and strong resolutions against the new physician's assistant concept are in the process of gaining momentum. To counteract these efforts, the principle of close communication and coordination in planning for the implementation of a new member of the health team should be recommended.

The realities of the job in which the student is ultimately placed will, in the long run, determine our capacity to keep the student satisfied. Job satisfaction, based upon opportunity to gain personal recognition, adequate financial rewards by our current living standards, and opportunity for personal advancement are some of the criteria for job satisfaction which will be applied to these innovative positions.

Not only is there a need for careful job description and analysis of these programs, but the appropriate educational level must also be considered. The level of job responsibility and position on the health team should determine the depth of education and the length of training required.

Many health educators believe that an increase in needed health manpower may be accomplished by increasing the number of associate degree, community college, two-year programs. The medical profession must provide leadership in the development of new curricula for these health education programs. It is impossible to provide the resources of a medical school to each program, but effective educational programs demand a close working relationship with the medical community. Accordingly, physician's assistant programs should only be located in schools or colleges of allied health where they are in a coordinated program with medicine.

It will be necessary to develop standards of evaluation for present and future physician's assistant programs. Criteria for admission and other objectives of such programs should be based on a delicate balance between the needs of the appropriate medical specialty and the needs of the candidates. The concepts of upward and lateral educational and occupational mobility ought to be considered in the development of any new health curricula today, and the academic credit offered by the new program must have transferability into other health curricula.

Effective employment of personnel is essential for the proper delivery of health care, and the individual capabilities and responsibilities of all the health professions need to be appreciated and utilized by the medical community. The curriculum of the medical school

must also include the concepts of utilization and team leadership so that physicians of the future may learn in the classroom how to work with allied health personnel.

Other factors which will contribute to the successful operation of the new physician's assistant programs include adequate instructional funds for operation, suitable teaching space, scholarship incentives for students, the availability of well-trained staff, the wise selection of students and standardization through certification or licensure in the future.

It has not yet been demonstrated whether the allied health professions and new assisting personnel provide some of the answers to the health manpower dilemma, but the priorities of the present educational and clinical programs have failed to provide a solution, and it is hoped that innovative programs, based on careful research, may develop to meet the challenge and opportunities of the health industry in the years to come.

GUIDELINES FOR THE DEVELOPMENT OF NEW HEALTH OCCUPATIONS

Thomas C. Points, M.D., *Chairman,
Committee on Emerging Health Manpower
Council on Health Manpower
American Medical Association

One approach to increasing the supply of health services is rational delegation of some of the physician's traditional functions in delivery of health care. Such an approach involves reallocating duties between the physician and other health personnel to achieve the best use of skills at each level, and often results in reducing the time input in education required to perform a given health service. This reallocation of duties can take place in two ways: by expanding the medical service role of existing health occupations, or by creating and recruiting for new career roles to assist the physician.

Neither of these methods is in itself new. Physicians have been delegating tasks to allied workers and training their own "assistants" for many years. Many physicians, within their office settings, have been highly successful in training persons to perform specific functions previously associated solely with the physician's role. The duties of these assistants are specifically tailored to the physician's pattern of performance, and in many instances they exercise some judgment.

Historically, new allied medical occupations have developed in these steps: identification by a physician of the need for a new helping

*As of September, 1971, John B. Dillon, M.D., is Chairman of the Committee on Emerging Health Manpower

role, the training by the physician of a person to fill that role, the proliferation in numbers of the new type of personnel to the point where an organization is formed to speak for them, and, finally, the establishment of informal collaboration with the appropriate medical specialty groups and the AMA Council on Medical Education, in the development of essentials for education of such personnel.

In recent years, however, both the pace and character of this development sequence have changed. Stimulated by the acknowledged shortage in virtually all types of health services, the process of developing new types of assistants to physicians has been accelerated, and has become formalized or institutionalized at earlier stages of the sequence. In many instances, the determination of need for a new helping role is now an organized effort, rather than an evolutionary process, conducted by a medical specialty or within an educational institution. In a few cases, a curriculum and training methods have been developed even before documentation of the need for and role of the new occupation, and without consideration of the degree to which existing health occupations could fill that role.

The AMA strongly endorses the concept of innovation and experimentation in developing new categories of health manpower. This "accelerated evolution" in new types of assisting personnel will possibly enable the health manpower pool to expand at a faster rate than would be possible otherwise and thereby assist in increasing the supply of health services. Depending on the programs, the acceleration may also of course pose such dangers as irrelevance to actual practice needs, lack of adequate physician supervision, or overlap with the duties of existing personnel. Once established, however, new health occupations quickly and naturally tend to seek recognition through certification or licensure, and in other ways to become "institutionalized" within the health system. It seemed important, therefore, for the medical profession to assume an active role in influencing and guiding the development of such new occupations.

Accordingly, the AMA Council on Health Manpower, through its Committee on Emerging Health Manpower, has undertaken responsibility for evaluating the need for and proper role of specific new types of health personnel.

To provide a consistent frame of reference from which to conduct its evaluation of such new occupations, the Council on Health Manpower prepared "Guidelines for Development of New Health Occupations," which specify the desirable steps to be taken and questions to be resolved by any group or institution attempting to develop a new health career. These guidelines, which were adopted by the AMA House of Delegates, are reprinted in their entirety at the conclusion of this report. The guidelines in no way represent minimum standards to be met in the development of a new health

occupation, but rather suggest optimums to be striven for by the group concerned.

Currently at least 20 programs are in operation or planned for training new types of workers to assist physicians.[1] The keynote of these programs is variety. Length of training varies from eight weeks to five years, and educational settings include medical schools and medical centers, public and private hospitals, clinics, junior and community colleges, and universities. Prerequisites for admission vary from high school graduation, to experience as a military medical corpsman, to possession of a baccalaureate degree, and the credentials awarded vary from none to certificates or an associate, baccalaureate, or higher degree. Proposed employment settings include physicians' offices, hospitals, clinics, and emergency rooms; job descriptions vary from general to highly specific; and the level of functioning ranges from purely technical to highly judgmental.

This diversity in concepts of the "physician's assistant" accentuates the need for medicine to develop overall standards and curriculum essentials which can be applied to all of the programs training new types of physician support personnel, so as to ensure orderly, well-planned development. However, the current situation is unique in a number of respects. In the past, AMA involvement in the accreditation of educational programs for allied medical occupations usually came at a point where the occupation had already progressed through the evolutionary process described earlier, to the point where the need for the occupation had been "self-validated" and the training programs in operation exhibited some consistency in curriculum. In addition, either an organization of the "assistants" themselves or a parent medical specialty had often already formulated essentials for training for the occupation which could be considered by the AMA Council on Medical Education, modified as deemed appropriate, and submitted for approval to the House of Delegates.

With currently developing physician's assistant programs, the situation differs generally. The time taken to validate the need for these occupations has been compressed, taking the form of task analysis and/or survey of potential employers of such assistants; in some instances such validation is incomplete or lacking. Content, duration, and setting of current training programs vary widely, and there is a relative lack of unanimity as to the criteria for an acceptable physician's assistant or as to levels of such assistants, as well as to the curriculum format for training such personnel.

For this reason, the Committee on Emerging Health Manpower initiated a series of meetings with project directors and others who are active in training of "physician's assistants," to undertake joint

[1] Kadish J. Long JW: The training of physician assistants: status and issues. *JAMA* 212:1047-1051, 1970.

development of an overall concept of physician support personnel. Following the format of the "guidelines," project directors will assemble information on their individual programs and their relevancy to health service needs. Study and distillation of this data base will enable the Committee and consultants to identify similarities, resolve differences, and structure a rational concept detailing the level of competence, scope of duties, relationships with other health workers, supervisory requirements, and other criteria for new physician support personnel.

Following development and approval of this concept by the Committee and the Council on Health Manpower, the AMA Council on Medical Education will develop standards and essentials for the training of such personnel. After these essentials have been approved by the House of Delegates, the Council on Medical Education will establish a program of accreditation for individual training programs in collaboration with appropriate medical specialty and allied medical groups.

This institution of a coordinated approach to development of physician support personnel will help to ensure maximum return from the dollars and facilities committed to health manpower training. Through the development of rational educational modules and accreditation of training programs, too, a person entering this field will be afforded potentials for both vertical and lateral job mobility, and can be assured of career recognition and sanction of the health team.

Guidelines for the Development of a New Health Occupation*

I. Scope of Duties:
   A. A job description should be available, providing a delineation of potential duties and responsibilities. Such a description should not be overly detailed to the point of rigidity.
   B. Limitations of function appropriate for assuring quality care and protection for the public should be defined.
   C. Procedures for assuring necessary medical supervision should be developed for the variety of potential employment settings.

II. Need:
   A. A careful analysis of the area of service under consideration should be provided. The analysis should address such questions as: (1) Who is presently delivering the intended service? (2) What limitations in the provision of service make it necessary to develop an additional type of personnel? (3) What would be a reasonable projection for the number of new personnel that could be employed in ten years? The method for arriving at the projection should be discussed. (4) Why would it not be possible to assign the functions to be performed by the new personnel to existing manpower categories, thereby avoiding the necessity for creating a new category? Careful attention should be given in the analysis of the need for the proposed manpower

category to documenting and justifying why the alternative of creating a new occupation is indicated, and to the potential impact of the new category on existing occupational categories. Where it is methodologically reasonable, such techniques as a "task analysis" of the service area should be utilized.

B. The practicing medical profession should be consulted early in the planning stages of a new occupation, particularly in documenting the anticipated degree of acceptance and utilization. Ideally the constituent or component medical society or appropriate specialty society should be involved as a co-sponsor.

C. An indication of public acceptance of the new occupation should be discussed.

III. Education and Training:

Although it is recognized that the responsibilities of the Council on Medical Education include primary interest and concern in matters related to education involving the allied medical professions and services, the Council on Health Manpower will consider the educational planning necessary to ensure the continuity of the program and of the relationship of training requirements to related manpower categories.

A. A teaching program leading to a degree, diploma, certificate, or similar credentials is regarded as preferable from the standpoint of both the profession and the student. Horizontal and vertical mobility of the individual should be considered. Opportunities for future educational advancement should be indicated.

B. Total time involved in training a new type of allied health worker and cost per graduate should be compared with that for training a physician, with the view in mind that educating the individual as a physician might be considered a desirable alternative.

C. Supervised clinical training should be broad enough, under adequate direction, to assure the supervising physician that the "assistant" is qualified to perform without excessive additional training by the employing physician.

D. The program should include a method of assuring the continued competence of the individual to provide quality health services.

E. Provision should be made for a highly competent individual to use his "on the job experience" to move up the career ladder of responsible positions. Provision should also be made for recognition of this experience in lieu of educational prerequisites to registration or certification.

F. The curriculum should be broad enough to allow career flexibility for the student. Potential movement to other health fields should not be precluded by a highly specific curriculum.

G. Choice of educational setting should be related to information received under II-A.

H. Continuity of adequate funding should be assured. A successful program, advancing from the experimental pilot phase to an ongoing basis, must anticipate termination of outside "project grant" funding, and have identified the appropriate sources of ongoing financial support.

I. A recruitment program should emphasize attracting people into the health occupation who otherwise would have sought employment in a non-health field.

IV. Employment:

A. An appropriate compensation range and methods of remuneration should be at a level and of the type which will attract qualified people. It should be at least equivalent to that offered other occupations in the same geographic areas with a similar degree of education, experience, and responsibility.

B. Substantiated employment opportunities are necessary. Figures should be available showing the number of persons completing this training who can be employed in the compensation range indicated. Ideally a listing of specific potential employers should be available.

C. The geographic area of potential employment should relate to the area of greatest need, be it in rural, low-income urban or other areas.

V. Professional Certification:

Procedures for establishing competence to practice should provide individuals in the new occupation with appropriate recognition to assure geographic, educational, and career mobility. A program of certification with leadership provided by the relevant professions is preferred to licensure, which tends to be restrictive. A democratic role in the certifying process should be structured for personnel in the health occupation being established.

VI. Career, Education, and Geographic Mobility:

A. Mobility within a discipline and between disciplines should be provided for. Two avenues for advancement in responsibility should be open:

1. Advancement through practical experience and attainment of a high level of competence, and

2. Academic achievement building on a foundation of previous educational attainment.

B. Provisions should be made, through a medium such as certification of competence, for interstate movement of individuals functioning in this new allied health field.

*Adopted by the AMA House of Delegates, Denver, December, 1969.

THE DEVELOPMENT OF PHYSICIAN SUPPORT PERSONNEL

Manpower Utilization

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There is increasing evidence of an acute shortage of people trained to provide health care services. As a potential solution to the problem, support should be given for the development and training of a new health professional to augment the general or broad-based primary physician, using available faculty talent and existing facilities.

In contemplating the use of specific personnel to augment physician services, consideration must first be given to the striking maldistribution of physicians that exists from one state to the next, within the borders of single states, and even within single metropolitan areas. Though a great disparity exists between need and availability among various types of physicians, the greatest stresses are experienced by the general physician. Faced with intolerable patient loads, inadequate family lives, and the difficulty of continued professional education, the conscientious generalists, general internists, and general pediatricians are leaving their practices after ten to fifteen years. Medical students too are aware of this plight, and are increasingly turning to narrow subspecialties, further exaggerating the problem.

Careful examination of the physician's role can reveal the advantages of training an individual who could assist the broad-based physician throughout his entire realm of duties; thereby reducing the manpower shortage through the extended provision of professional services to a greater patient population. Since the physician's assistant

is one who is to do tasks currently performed by the physician himself rather than by other existing categories of health care personnel, this individual must possess certain basic characteristics in order to be effective. He must be career motivated because time commitment is important and he may have to work the same, sometimes irregular hours as the physician. Also, geographic mobility between the physician's home, the hospital and the office may be required of an assistant. Finally, and most important, he must have career stability so that, like the physician, he can maintain a continuous employment pattern in order to justify the expense of his education and training.

Although there are currently 2.8 million people in health occupations, and this number is expected to increase to 3.8 million by 1975, the existing nursing and allied health professions have manpower shortages parallel to physician shortages and are not the ideal sources from which to select individuals to augment the physician manpower supply. In the face of obvious need, there does exist a relatively large untapped manpower pool, the military corpsmen. Some 32,000 corpsmen are discharged annually who have received valuable training and experience while in the service. If an economically sound, stable, rewarding career were available in the health industry, many of these people would continue to pursue such a course. From this manpower source, it is possible to select mature, career-oriented, experienced people for physician's assistant programs. Though this is the largest untapped manpower source, there are many others from civilian settings who also could be utilized in the new programs: those who have received training and experience in the health sciences but who now find themselves in stagnant health careers or patient services where they can only 'progress' in administration, rather than in patient care.

The Physician's Assistant program at Duke University is 24 months in length, including a nine-month academic period of basic science and fifteen months of clinical training. Prerequisites for admission to the program include at least three years experience in a health field, one year of which must have been in direct patient contact. During their academic training the students receive 1,040 hours in physiology, pharmacology, and many of the other patient science areas. They are also given the opportunity to develop their skills in laboratory and diagnostic procedures. The program is developed to enable the physician's assistant to perform a broad array of tasks and to supplement rather than compete with other allied health professionals.

An important aspect of the Duke program is evaluation. The creation of a new role within the established health care system has caused several issues to be reviewed and investigated, and although the program does not include a job description for the physician's assistant, he is provided with sufficient background and capability to enable him to effectively augment the physician's work.

In general, patient acceptance of the physician's assistant has been satisfactory. None of the patients encountered have exhibited any negative attitudes towards the innovation, and studies indicate that the degree of acceptance correlates with the patient's level of educational attainment and income range. Patients from low socio-economic groups feared that they were getting second class medical care, and those from highly affluent groups felt a loss of status when they were cared for by "just a physician's assistant." However, those in the middle bracket were very enthusiastic in their acceptance of the physician's assistant, partly because they could communicate and relate to him more easily than to the physician.

A cost analysis revealed that the annual expenditure required for training the physician's assistant is about the same as that required for the training of medical students. However, in the long run the total expenditure is considerably less due to the fact that these people receive two years of training compared to the six to eight years for medical students.

Also being evaluated is a study on physician productivity. Although it is too early to estimate the exact amount of additional productivity that employment of an assistant would allow, study data indicates an approximate increase of 75 percent. This could augment the physician's patient care output, his leisure time, or opportunities for continued education.

Another problem concerns the question of academic recognition, which has bearing on career mobility and flexibility. There was some initial difficulty in having the program accepted as offering a baccalaureate degree, but this is being resolved and credits from the Duke program are transferable to several other institutions that are in the process of establishing similar programs.

The use of new types of manpower in the health field can present legal difficulty in view of current licensing laws for medical personnel. All states have licensure laws to regulate the practice of medicine which make an unlicensed person liable for any action within the scope of the licensed profession. The initial question therefore, is whether graduates would, by their activities, infringe upon the sphere of persons performing under this mandatory licensure. The problem was considered in 1966 by the North Carolina Attorney General, who felt that the performance of these physician-supervised activities would not contravene the licensure laws of the State. The program has operated thus far without legal difficulty, although efforts have been made to resolve the problems more definitively. After several conferences with representatives from organized nursing professions, boards of medical examiners, legislators, and other interested citizens, some proposed legislation has now been developed which will be put into the 1971 session of the Legislature. This will make legal the delegation of tasks to physician's assistants. It seems to be a better approach than trying to license the

physician's assistants, which would only further fragment medical services and create unnecessary limitations. This indirect recognition issuing from the physician's license will allow the assistant to perform tasks for which he is well trained and competent, while saving an important amount of the physician's time.

The question of professional liability has been investigated. The physician's assistant is trained to perform such functions as suture repairs, lumbar punctures and bowel biopsies, so that liability insurance is an important issue. Recently the problem was placed before the AMA's major malpractice insurance carriers (most of whom are members of the Insurance Rating Board) and a policy was established to furnish liability coverage to the physician's assistant at a rate approximately 50 percent of that charged to the employing physician. Since the physician's assistant has to function along with the physician in all areas, including the hospital setting, the Joint Commission on Accreditation of Hospitals has, during the last year, changed their by-laws and regulations to a degree sufficient to allow the assistant to participate in the hospital through certain specified particulars.

The physician's assistant concept has raised questions in the areas of legislation, liability insurance, licensure, patient and physician acceptance, and educational mobility. As pointed out, concerted efforts are underway to identify the legal responsibilities and the best methods of recognition for this group. Liability coverage has been made available to employing physicians and hospitals, and to the university-trained assistant himself. A spectrum of attitudinal and cost-benefit studies indicate that these new members of the health team have been accepted by the patient and the physician, and that they can augment and extend the physician's services by more than 50 percent. This being so, it seems plausible that the size and scope of the Duke program, and those similar to it, will increase.

If properly controlled, the development of the physician's assistant could effectively alleviate the current shortage of health care personnel. What is needed at this time is tremendous input from organized medicine, and most specifically, the American Medical Association, which must provide professional leadership and guidance to institutions seeking to develop programs for the training of physician's assistants.

ALLIED HEALTH WORKERS IN PEDIATRIC PRACTICE

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In a discussion of the problems concerning pediatric manpower it is important to have studied the likely outcome of various alternatives, and far more study than has been possible in the past is desirable. However, studies and demonstrations cannot be permitted to serve as an excuse for delaying action that can be based upon what is already known. Rather than delay action until all study has been completed, action should be accompanied by study in pilot trails to compare the alternative solutions.

The American Academy of Pediatrics has established an Office of Allied Child Health Personnel which has classified and prepared guidelines for allied health personnel. One of the stated purposes of the American Academy of Pediatrics is to "establish and maintain the highest possible standards for pediatric education, pediatric practice and research." The Academy has concerned itself with education of physicians in the past. It is now important that it state its position concerning the development of programs to train personnel other than physicians. Such personnel, working as members of a health team headed by a physician, can provide better child health care to more children than the physician working alone.

It has been common practice for many years for physicians to personally train the assistants who work in their offices. The assistants become experienced in conducting many of the common and repetitive office tasks. They have often become trusted associates and

are considered necessary for successful operation of the physician's office.

Quite frequently these assistants are registered nurses. They and other types of supportive personnel have contributed significantly to the delivery of health care in the United States.

As a result of their education and training these nurses have a knowledge about disease and an understanding of interpersonal relationships. They have been indoctrinated in matters related to professional ethics and have had training in therapeutic procedures. The advantages of serving as physicians' office associates include regular hours, job satisfaction, and the respect of being a person important to both the doctor, and the patient, who understand and accept the associate as an informed and trusted member of the health team.

Non-nursing pediatric office assistants and licensed practical nurses have conducted many office tasks such as weighing and measuring babies, giving immunizations, helping with the telephone, establishing pleasant relationships with mothers and providing interpretation and follow-up instructions. Almost without exception physicians have retained for themselves the responsibility of providing child health supervision, diagnosing disease, determining therapy and providing counsel for behavioral problems. Part of the reason for the division of professional responsibilities has been legal, but the major reason has been custom or common practice.

There is no doubt that this division of responsibility has resulted in superior infant and child health care; but there is also no doubt that highly-trained physicians have had to spend a great deal of time with certain matters of supervision and management more appropriately handled by supportive personnel.

The lack of sufficient physicians to provide child health care requires that methods of providing care be reviewed. The Academy is aware that nursing shortages based on job vacancies exist; however, it is also convinced that registered nurses are often used inappropriately in present pediatric office practice and that many tasks now performed by the pediatric office nurse can be performed by other health personnel.

The American Academy of Pediatrics, through its Committee on Pediatric Manpower, conducted a survey of the office practice of Fellows of the American Academy of Pediatrics which indicated that a high proportion, about 80 percent, of practicing Academy Fellows were performing patient care tasks which they felt could and should be delegated to other health personnel. Furthermore, the survey revealed that a high proportion of pediatric office nurses were performing technical and clerical tasks that could be shared with assistants. It also documented the fact that the great majority of Academy members are interested in developing alternative methods of

meeting patient care needs by realignment of office assistants and nurse associates to improve present delivery methods.

On the basis of this survey, the Academy made recommendations to develop programs for the training of supportive pediatric personnel. It is now the official position of the Academy that a physician may delegate the responsibility of providing appropriate portions of health examinations and health care for infants and children to properly trained individuals working under his supervision. Such personnel must be tested to determine their competency, and those who qualify should receive appropriate certification.

To achieve these objectives, the following classifications of pediatric health personnel are recommended: the pediatric nurse associate, the pediatric office assistant and the pediatric aide.

A pediatric associate is a registered nurse who has completed either a diploma nursing program, an associate degree nursing program, or a baccalaureate nursing program, and who has additionally completed a recognized pediatric nurse associate program. The associate's work will be performed under the supervision of a physician primarily in an office, clinic or health center involved in the delivery of ambulatory health care to children. Responsibilities may include activities which are directly related to patient care, such as obtaining medical and health histories, performing portions of the physician examinations, giving information and counsel, and managing health problems as determined by the physician.

In the past, the theory of nursing practice has not always been implemented in offices and on-the-job training situations. However, it is becoming readily apparent that, in the physician's office, a preceptorial relationship between the physician and his associate must be developed in order to implement the full range of skills for which the nurse has been trained.

The pediatric office assistant, who should have completed, when possible, a two-year college program or its equivalent, or who is a graduate licensed vocational or practical nurse, will work under the direction of either a physician or his nurse associate. The duties to be performed would include screening procedures such as hearing and vision testing, weighing and measuring, education counseling, and obtaining medical histories.

The pediatric aide, who has always been present in the pediatrician's office, should have completed high school or its equivalent and will usually be trained on the job by a pediatrician who is certified by the American Board of Pediatrics. The pediatric aide will work under the supervision of the physician, the pediatric nurse associate or the pediatric office assistant.

It may be useful here to review an action-oriented program at the Massachusetts General Hospital. This program was started in the Medical Clinic where chronic disease patients were overwhelming the

emergency wards and outpatient departments. A study of the departments demonstrated that the nursing staff was being inappropriately utilized, and after some discussion and planning, an Internal Medical Nurse Clinic project was launched in 1962.

The care of medical patients with chronic disease had three objectives: maintenance of patient participation in medical treatment over long periods; prevention and early recognition of complications of the disease or its treatment; and management of the ordinary emotional adjustment problems. As presently organized, the nurse schedules consultations with patients, and when necessary, initiates limited physical and laboratory examinations. The operation of this clinic is such that patients are in constant contact with the nurse and have periodic contact with the physician. Such nursing-medical practice has been extended to special clinics concerned with long-term anticoagulation, diabetes, tuberculosis, alcoholism, and occupational health.

Following immediately upon the heels of this expanded nurse role in the medical clinic, the pediatricians proposed a similar expansion of the nursing role in well-child care services for nurses present in the Children's Clinic. This was implemented after similar plans, discussions, and professional committee clearances in 1963.

In the well-child conference, the doctor meets jointly with the nurse and parents, examines the child at four weeks, six and twelve months and then annually through six years of age. The nurse sees the child monthly through the first year and at six-month intervals thereafter. The content of the nurse's visit with the child and mother includes an interval developmental history and inquiry about the child's social and emotional adjustment. Other duties include hearing and vision testing and accident-prevention education. Although the physician sees the child less frequently, his visits now enable him to spend more time in comprehensive coverage of both the physical and psychologic care, starting with the nurse's preliminary notes. So that this professional arrangement will not result in depersonalization of the patient-physician relationship, the doctor maintains a comprehensive interest in the patient at the time of his own consultations, and he is available to the nurse or the patient for additional advice whenever necessary.

Also in 1963 a sixteen-week education program was conducted comprising four hours of didactic and conference work and eight hours of supervised clinical practice. The course proved to be a success and has since continued as a funded program known as the Pediatric Nurse Practitioner Program.

These programs are evaluated continuously by questionnaires, interviews and observation, and it is abundantly clear that physicians, nurses and patients are happy with these innovations. Several instances

in which patients have sought out a pediatrician solely because he employed a nurse practitioner have been revealed.

Present staff has been deluged with requests for consultation by agencies and individuals in all parts of the country, and the enthusiasm is expected to increase. Interest has been specifically expressed in initiating a comparable program by 30 groups and agencies engaged in the delivery of comprehensive care. Visitors have been received from many parts of the world. Inquiries of a general nature have been received from 117 nurses, 24 physicians, and 25 health agencies from 38 states, the District of Columbia and the three largest cities of Canada.

In conclusion it may be stated that the pediatric nurse associate is a valuable ally to practicing pediatricians who desperately need help to meet the demand for child health care in this country. While there is less experience with the pediatric assistant, the need for a person who can perform technical, clerical and secretarial tasks to support the nurse and the physician is unquestioned. Programs to train such assistants should be introduced as quickly as possible in vocational and junior colleges to meet the challenge.

HEALTH MANPOWER PROGRAMS:
Santa Clara County Medical Society

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In 1968 the U.S. Department of Labor became aware of some experimental Physician's Assistant programs that had been conceived but not yet activated by the Allied Health Manpower Council of Santa Clara County in cooperation with the Santa Clara County Medical Society. That knowledge led to the awarding of a contract to the Santa Clara County Medical Society by the Labor Department for a study of the personal situations of 50 returning military corpsmen. The objective of this arrangement was to examine the problems or opportunities afforded by the utilization of military education and experience in the private health field. The goal of this contract has been achieved and four specific areas with their problems and solutions have been identified, namely recruitment of the returning corpsmen, re-education or supplemental education to training already received, employment, and the problem of licensure, certification, or registration.

The first area to be considered was recruitment. Early in the study it became obvious that there are only two available lines of communication for contacting potential recruits. One is through the channels of the commanding officers or the chief of personnel in the various military posts. The second is through the man's personal family unit which can promptly reach a corpsman by mail or telephone. Local publicity regarding local educational opportunities produced a number of responses and the contract originally designated

to involve 50 corpsmen over a twelve-month period, was extended for an additional year and included 110 corpsmen.

Concerning education, the Santa Clara project did not provide funds for the establishment of any special courses for returning corpsmen. This would not be feasible except where there is an extremely high percentage of corpsmen, such as on military bases. Supplementary training to the received in the military can best be provided in junior colleges where a combination of non-military and military students seeking education in a specialized health field is economically feasible in classes of 30 to 40 students. Since it appears that federal funds are not forthcoming to adequately finance the potential local demands for such courses in the total allied health manpower area, funding for such education will have to be borne by local school districts. Development of these courses will depend upon the extent of local enthusiasm, need and leadership.

When considering the question of employment, mention should be made of the vast number of estimates that have been given during the past two years as to the nation's shortage of allied health personnel. The scope of such estimates vary from "a current shortage of 100,000 persons," to "5-year prospects of shortages up to 300,000 or more." All such estimates are prefaced with the phrase, "there is a need." Such references to need are meaningless until they are measured in given "communities". The community may be a village, a city, a metropolitan county, or an entire state. The thrust of this study revealed that the only true measure of a need is the issuance by an employer, e.g. – a hospital, clinic, or solo practitioner, of an employment slip followed by the consistent delivery of a paycheck.

During the course of the study it was found that most of the corpsmen, 67 percent, seek careers requiring licensure status to meet state requirements, or the attainment of a baccalaureate, Master's or Doctor's degree. Only 33 percent stated that they would be content with a two-year Associate of Arts diploma, and even this group included the stipulation that they desired careers to carry them beyond their initial accomplishment, which may be limited for a time by personal or financial considerations rather than lack of ability. This brings up the difficult question of salary and competition from other industries. However competent or qualified a medical corpsman may be, unless he is offered adequate incentives by the health care industry he will look elsewhere for employment offering greater rewards.

Interwoven with the opportunities and problems of employment is the subject of certification or licensure. Currently in California, there are 13 areas of licensure in the health care industry. These include the physicians and surgeons, registered nurses, licensed vocational nurses, and ten other professions. There is legislative consensus that two methods of granting permission for the use of paramedics should be considered by the State Board of Medical

Examiners. The first method would be to grant certification on the basis of training and/or verified experience in limited sections of health services according to specialty, and in this case, subcommittees of the State Board of Medical Examiners would submit recommendations for individualized certification to be issued by the Board.

The alternate proposal would require the state to set up a system of "use-license" wherein the licensed physician, hospital or clinic would register by name, address, and other identification, the paramedics qualified to perform general or highly specific services under the jurisdiction and supervision of the licensed agent. It should be noted here that in seven other states besides California, legislators or legislative consultants have almost identical approaches under study.

A study of the self-directed activity of corpsmen in the Santa Clara County program disclosed that their anticipated career goals were: Doctor of Medicine – 9; Registered Nurse – 3; Optometrist – 1; Clinical Psychologist – 1; Medical or Psychiatric Social Worker – 4; Psychiatric Technician – 5; Inhalation Therapist – 4; X-ray Technician – 7; Physical Therapist – 3; Medical Technologist – 2; and several others.

In the meantime, these men and three women are enrolled in health oriented courses compatible to their short-term or long-range goals at local junior colleges or at San Jose State College. Most of these corpsmen are also working part time. Whenever possible, the staff of the project has assisted them in securing local health service employment at hours that best suit their on-going scholastic endeavors. The range of this temporary or part-time employment includes positions as psychiatric aides, surgical aides, nursing assistants, LVN's, operating room technicians, orthopaedic aides, orderlies, and lab technicians.

In summary, it can be said that the four areas of recruitment, education, employment and certification are separate and apart from each other, but at the same time they are interlocked in their evolution and development. All who endeavor to be active in the field of expanding the health manpower supply should consider the extent to which these four areas are interdependent. As an example, the employer must concern himself with the state's legislative permissiveness in the use of new health personnel. His willingness or hesitation to act will depend on the rules of licensure as they are, or any future developments in certification and registration. The prospective employer must also concern himself with the scope of the employee-applicant's education and whether the applicant's training is applicable to his needs. The educator must have some knowledge and assurance that employment opportunities will be available to his graduates, and that they can receive certification or registration based on the

education he provides. Likewise the recruiters, who in essence become promisors, should concern themselves with the end results of their endeavors. Finally, legislators have an obligation to recognize that long standing traditions and special interests should no longer restrict the evolvement of new health careers which are compatible with today's standards and demands.

THE ALLIED HEALTH PROFESSIONAL

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It can be inferred from preceding comments that because of the potential for harm inherent in any change in the health care delivery system, the proposed emerging professionals should be subjected to intensive and extensive study, evaluation and critique. There is nothing unsound in such a process. No one wants to wind up with a health care system worse than the one we have. However, the question arises: how long do you study and what do you study? Five years was suggested as the length of time necessary for evaluation. This would probably be too short a time to measure more than just the immediate effects such a new type of health professional would have on our system. Although it would be possible to record effectiveness in increasing the numbers of patients seen, the long-range effects on the patterns of morbidity and mortality would require prospective studies of longer duration. It also has been suggested that only two of the proposed prototypes might be recipients of federal support during this study. There is no fault with the logic which selected these two, for they are certainly exemplary programs, but this limited support should not be prejudicial to the dozen or so less fortunate programs.

It would be sad indeed if experiments potentially more effective were permitted to expire because a federal agency backed the wrong horse. The federal exchequer has obvious limitations in this regard and the government cannot and should not provide funds for

all. However, no attempt should be made to crystallize any of these initial efforts either through funding, legislation or accreditation procedures, before the potential of many if not all others have been evaluated.

Furthermore, there seems to be no great risk in letting 30 or 40 well-monitored programs experiment with various new types of health care personnel, as long as the numbers produced are limited, and it is understood by all concerned that these are only experiments and that some of the people involved may find their expectations have exceeded their potential utility.

These experiments must be located in environments which provide not only the best opportunities for success, but also the critical and objective evaluation they demand, where the major input and collaboration comes from the academic sector of medicine.

The idea that in ten years or so we may have enough physicians in the United States to take care of the needs of all of our people and we will not need these newer types of personnel is the numbers game at its worst. Israel, with probably the highest physician-population ratio in the world, still depends on the public health nurse for a great deal of its care outside its two comfortable cities. Closer to home, the island of Manhattan has a physician-population ratio of 210 per 100,000 compared to the rest of the country which has 145 physicians per 100,000 people. And yet a major census tract on that very same island (East Harlem) must seek its health care in the overcrowded emergency rooms of hospitals within its teeming neighborhoods, for here there are only 25 medical doctors for 250,000 people.

The fact is that physicians do not distribute themselves according to population needs. Increasing the supply of physicians, although important and necessary, is not of itself the answer to the problem of the provision of effective health care. Can and will these new types of health professionals function to alleviate the maldistribution of physicians? I do not know the answer to this question; I can only hope so.

The view that perhaps some of the successes demonstrated in existing experiments were attributable to the careful selection of exceptional students has been expressed. Of course the candidates were very carefully selected and why not? It is not the intent of the directors of these programs to prove that randomly selected nincompoops can do the work of a physician. What we are trying to demonstrate is that some individuals with less extensive training than the physician but with dedication and intelligence can perform as well some of the tasks previously considered the physician's sole responsibility.

It has been suggested that when we talk about expanding the roles of existing health practitioners that we should be talking with

them rather than to them. As Dr. Connelly observes, the nursing profession recently pointed this out to us very deliberately. Physicians cannot set about planning role changes for other health professionals in a paternalistic fashion. These professionals are no longer the ancillaries of years past. They are mature, responsible, sophisticated experts who have a perfect right to decide their own destinies; hopefully not in isolation but in collaboration with all other members of the health care team.

Finally, there is the question of a name for these new professionals, and what kind of career ladders can be made available for them? At the University of Kentucky this prototype is called the Clinical Associate simply to give the position more dignity. Perhaps the answer to this as well as the career ladder concept is before us and we have failed to see it. Already there is a well established process functioning in academe, by virtue of degrees of ascending sophistication. Could not the same process apply to medicine so that students in the two-year program would obtain an Associate degree in Medicine, the four-year programs, a Baccalaureate of Medicine and so on through Master of Medicine to the Doctor of Medicine? This seems both a logical and orderly way to proceed.

In conclusion then, a quote from F. M. Cornford who in a little known monograph called *Microcosmographia Academica*[1] cautioned us about the "Principle of Unripe Time." He noted that some people will always resist change by use of the argument that the time is not ripe. He says, "Time, by the way, is like the medlar; it has a trick of going rotten before it is ripe."

Reference:
[1] R. W. Beatty, Ltd., 1908

MEDEX: A NEW MANPOWER RESOURCE

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In July of 1969, a conference was held of presidents and other officers of state medical associations to discuss the domestic aspect of global community health. Their view of community health was defined as an all-encompassing, or systems approach, to the provision of health services to population groups. The idea was concerned with the effects of the health system on other systems and the reverse effect of other systems on the health of society in these changing times.

This concept of interacting systems led to the design and implementation of our program in the State of Washington called MEDEX. Concern for the health manpower crisis in the United States and the lack of utilization of an already trained health manpower pool produced by our defense system resulted in this program to train a new health professional for the civilian population.

The State of Washington, like many other states in our nation, is faced with a severe manpower shortage in the medical profession. Much of the shortage can be explained by distribution patterns. There are certain population segments in the state which have difficulty obtaining adequate medical care when and where they need it. In some areas, this difficulty is due primarily to a lack of physician manpower. This is true especially in the rural parts of the state where the physician-patient ratio is constantly diminishing due to the urban migration of doctors and replacement failures.[1] In addition, the age of

general practitioners in these rural areas is steadily increasing.[2] Thus efforts are needed to increase the capacity of practitioners already in the area, as well as to make general practice more attractive to physicians seeking new work settings.

There are many programs in this country, operational or in the planning stages, which are designed to train sub-professionals whose place on the health professional ladder is not clearly defined. Many of these sub-professionals perform a role of relieving the physician or his nurse of much of the uncomplicated parts of medical practice. However, most of the highly technical procedures involved in primary contact care still remain the sole responsibility of the practicing doctor. Thus, there remains the need to relieve physicians of more of the time-consuming procedures, that is, to help physicians become more efficient by extending their capabilities.

The U.S. Department of Defense has developed ways of rapidly training medical personnel to meet its specific needs which are similar to those of the civilian population. Each year thousands of medical corpsmen leave the military services. They have had extensive training and experience in the provision of primary medical care while in the service.[3] Of the 30,000 corpsmen discharged annually from the military with some medical training, over 6,000 of them leave the Army, Navy, Air Force and Coast Guard where they have been providing primary medical care. They return to a civilian setting which is unable to utilize their extensive training and proven talents. Some with specialized training take allied health jobs; the majority find that there is no way that they, as civilians, can use the 75 hours of didactic and laboratory training they received in human anatomy and physiology, the hundreds of hours of medicine, surgery, pharmacology, orthopaedics, training in histories and physicals, etc. Some of these people, such as Special Forces and Navy "B" Corpsmen, receive 1400 hours of formal medical training, which may include nine weeks of a supervised "clerkship". Army corpsmen of the 91C series may have received up to 1900 hours of this formal training.

Most of these men have had three to twenty years of experience, including independent duty on the battlefield, aboard ship, or other isolated stations. Many have some college background; Special Forces "medics" average 1½ years of college. After at least two, and up to twenty, years in uniform, these men have certain skills and knowledge in the provision of primary care. Once discharged, however, the investment of public funds in medical capabilities and potential care are lost, as they work as detail men, insurance agents, burglar alarm salesmen, or truck drivers. The majority of this vast manpower pool is unavailable to the present medical care delivery system because, up to this point, we have not devised a civilian framework in which their skills can be put to use. It is from this pool that personnel for MEDEX has been drawn.

MEDEX is designed to utilize the products of the military system which have heretofore not been adequately adapted to the civilian health setting. The purpose of the MEDEX (medicine extension = physician's extension) program is to develop an extension of the physician: another pair of skilled hands under his supervision available to help him 24 hours a day, and a person trained by and for a specific physician. MEDEX is a model of non-physicians extending primary medical care transferable to rural, suburban, or urban settings. It is anticipated that this model will demonstrate that former military corpsmen with additional practical training can perform many tasks presently performed by civilian physicians which do not require the extensive and sophisticated education obtained in medical schools. There are a few physicians who presently employ men in analogous practice settings.

In the initial Preparatory Phase of the project, a number of general practitioners in rural Washington were visited. Prior to the visits, these men had been identified as practitioners who were overworked by an increasing patient load, unable to find time to take continuing education courses, unable to spend more than three or four days per year away from their communities for leisure activities with their families, or planning to leave their practices for a less demanding scene in urbania.

Most of these physicians have had military service, and were able to list a number of tasks which the Medex could perform for them in their practices. Their experience with military corpsmen, and their obvious need for assistance, created a situation which made MEDEX appropriate in their communities.

Discussions were held with the Washington State Medical Association and the medical faculty at the University of Washington. In addition, meetings with members of the nursing profession in Washington pointed up some potential problem areas which resulted in a productive input into the design of the project. It was decided that the MEDEX demonstration program should be a joint effort of the Washington State Medical Association through its research arm, the Washington State Medical Education and Research Foundation, and the School of Medicine at the University of Washington. It is apparent that the complementary capabilities of these two organizations are integral to the MEDEX concept.

Visits were made to a number of Army, Navy, Air Force and Coast Guard installations to inform groups of corpsmen about the proposed project, and to elicit applications. Funding was obtained from the National Center for Health Services Research, Health Services and Mental Health Administration of the United States Public Health Service, Department of Health, Education and Welfare. A core staff was assembled and the development of intensive task-oriented curriculum was initiated in May of 1969.

Initial screening of the 80 applicants produced 26 corpsmen as

applicants to be interviewed for the fifteen positions chosen for this demonstration project. Fourteen physicians, who indicated they would be willing to train fifteen Medex in a twelve-month preceptorship in their offices and subsequently hire them, volunteered to participate in the program. On the last two weekends of May, the corpsmen were brought to Seattle in two groups to meet with the staff and the physician-preceptors (half of them were present each weekend) for intensive interviewing and selection conferences. On June 3, 1969, fifteen corpsmen were selected as the first Medex.

The University Training Phase began on June 30. During the first week of this period and on three subsequent weekends, each Medex trainee visited at least five potential preceptors in their practice settings to facilitate the process of matching them to physicians. This process was completed four weeks later.

During the first three months of training, emphasis was placed on pediatrics, geriatrics (chronic diseases), histories and physicals, and psychiatry. Much of the training was in these areas in which the preceptors and staff felt the Medex should have competence and in which the Medex themselves felt they had the least amount of experience. Heavy emphasis was placed upon the psychologic adaptation the trainees would undergo in their transition from military medicine to the civilian practice setting.

The MEDEX faculty was composed of faculty members of the School of Medicine as well as physicians in private practice in Seattle and elsewhere in the state.

The Preceptor Phase began in mid-September, 1969, after the three-month University session was completed. Twelve Medex are in rural Washington; two are in an urban setting and one is with a suburban general practitioner. During the twelve months following the University Phase, the Medex will be performing tasks, many of which he performed in the military, under the immediate supervision of his preceptor, thereby increasing his physician's capacities. For the first months of his preceptorship, the Medex will assist the physician by learning and applying primary medical care skills under the physician's close supervision.

When the doctor has developed enough confidence in his Medex, he can employ him in a variety of activities geared toward extending the capabilities of his practice. Tasks that this new professional can perform include screening patients to be seen by the physician, taking histories, performing segments of the physical examinations, applying and removing casts, assisting in surgery, suturing minor lacerations, taking x-rays, performing laboratory tests during non-office hours, assuming certain administrative responsibilities, and being available to provide the physician with assistance any day of the week, any hour of the night. The full extent of the Medex' task capabilities are as yet undefined. Consideration will be given to

future requirements for skills in other areas as such needs become apparent.

A certificate was awarded each Medex upon the completion of the three-month University Training Phase and an additional certificate will be awarded upon completion of the Preceptor Training Phase.

Special attention has been paid to the selection of the corpsmen, the matching of Medex and preceptors, psychologic adaptation to the civilian medical scene, and the development of the Medex' self-image, identity, and status. Based upon our experience with this program thus far, the MEDEX staff feels that any large-scale attempts to utilize former military corpsmen in civilian settings should pay particular attention to these factors.

In addition to the in-practice training during the twelve-month preceptorship, the design of the program includes ten three-day weekend continuing education seminars. These seminars will occur in varying locations around the state and will be geared toward filling gaps in knowledge identified as the program progresses. Instructors at these seminars will be preceptors in the program and other private practitioners. Unlike the University Training Phase, the medical school faculty will play a relatively minor role in this third phase.

Three tools are being used in the evaluation of MEDEX. Engineers from the Department of Industrial Engineering at the University of Washington completed the pre-Medex Time-Motion-Task Study in each of the preceptor's offices during July, 1969. An outside consulting group completed its pre-Medex Outside Evaluation Study in each of the offices in August, 1969. The former is an objective study of how medical care is provided in the preceptor's community; the latter is a subjective study of what medical care is provided. The second part of each of these studies (post-MEDEX) will be conducted during the summer of 1970. After the Medex have been in their preceptorship for approximately nine months, a retrospective survey will take place in each of the communities involved. Selected populations will be questioned regarding the impact of this innovation on the delivery of medical care in their communities.

The conditions which produced the setting for MEDEX in Washington State are not totally unique. The State Medical Association's pioneering spirit to provide leadership and its expressed concern for its members were two important factors leading to the selection of this time and place for the demonstration program. Another important element was the very obvious need for help in rural Washington where dedicated general practitioners are growing increasingly concerned about their ability to maintain the present quality and quantity of care for their patients. Of major importance here also, is the

concept of a medical school evolving to meet the needs of its community.

Domestic implications of MEDEX should be obvious. Not so apparent, however, are the international developments that could result from American utilization of this available manpower pool. Although we are becoming more aware of our own health manpower needs, the world-wide perspective is one of acute crisis with no relief visible on the horizon. The changes MEDEX or similar programs might possibly effect in this country could hold potential for such developments in other nations which now spend considerable sums to maintain sizable defense systems.

Finally, MEDEX is not a radical innovation in health manpower, nor is it a new training program being developed within a university. It is a joint project of interdisciplinary input to develop the potential applications of ex-military personnel in the civilian health care system. It is an overdue effort resulting from a global perspective to pull together existing resources to meet a growing need in community health.

References:
[1] Data from Washington State Medical Education and Research Foundation.
[2] *Data Bank of Washington State Physicians,* 1968, Washington State Medical Education and Research Foundation.
[3] National Academy of Sciences, *Allied Health Personnel,* Washington, D.C., 1969, pp. 8-10.
[4] McClure, William W. "A 'Medic' in General Practice," *Medical Economics,* pp. 72-79, May 15, 1967.

THE ANESTHESIA TECHNOLOGIST

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It has been generally recognized that the increased demand for health services has placed a strain on all aspects of our health care delivery system. Because of the recent development of anesthesiology as a medical specialty, the demands for anesthesia care were not met prior to our confrontation by these new problems in health manpower. Anesthesiology also differs from some medical specialties in that there are presently two allied health groups involved in this area, the nurse anesthetist (over 12,000 members) and the inhalation therapist (6,000 members). The question might well be raised as to why a new type of anesthesia personnel should be proposed since an expansion of these groups might satisfy the need for more anesthesia services.

The general shortage of nurses for all purposes makes it a questionable practice to plan to further deplete such a group of health professionals in order to satisfy a need in anesthesia unless no other alternative is possible. Furthermore, an analysis of the training program of nurses reveals serious deficiencies for some of the tasks required in anesthesiology.

It should be noted that the increased demand for medical services is not the only new development facing medical practice at the present time. During the last fifteen years there has been a ten-fold increase in expenditures for biomedical research from 100 million to over 1 billion dollars. A logical and politically important demand has

been made that the new knowledge and techniques resulting from this work should be applied to improving medical care. The Heart, Cancer and Stroke Program was initiated for this purpose. Furthermore, a more informed public has demanded better medical care as evidenced by a dramatic increase in malpractice suits and insurance rates in medicine. These pressures only add to the traditional devotion of the medical profession to constantly improve our knowledge and methods of medical treatment so that our goal of the best medical care possible can be attained. Perhaps the quality of medical care will tend to suffer under the pressure of expanding the volume of our services; nevertheless, we must use all of our ingenuity and imagination to not only maintain our present standards but improve them as far as possible.

In surveying the several manpower pools available for medical care in anesthesia, numerous individuals have pointed out the striking waste and inequity that occurs when the premedical student is not admitted to medical school but must take a second choice for which he has little motivation and poor preparation. Although the majority of this group would have difficulty meeting the rigorous scholastic requirements of medical school, they are highly competent individuals and should not be lost to the health profession. A potential frustration of all allied health professions is the limitation of "dead end" professional training in which highly talented and vigorous individuals may find themselves. The proposal of a career ladder on which the doctorate degree represents the highest attainment gives an allied health professional the option of further advancement. The premedical student with a bachelor's degree and his training in science could easily go on to study for a doctorate degree even within our present system of medical education.

The proposal of the anesthesia technologist or perhaps better the Master Anesthesia Technologist is the outgrowth of the aforementioned considerations. The analysis of medical demands in anesthesiology lies in maintenance support and restoration of the vital respiratory and circulatory systems during critical disease states, such as general anesthesia and major surgical operations. This activity is also found in resuscitation, emergency and intensive care. A major emphasis is rightly placed on dynamic and continuous physiological measurements during the critical period. Biomedical research together with the development of the space program has provided exciting possibilities for the care of the critically ill patient. The addition of this new technology produces a host of new problems as well as opportunities for a new type of allied health personnel, such as the anesthesia technologist.

It is conceived that the technologists will be applied physiologists with training in depth in all resuscitation techniques, physiological measurements and monitoring and the technological knowledge

to utilize expertly electronic equipment and computers as they are indicated. Specifically, they would enable the anesthesiologist to follow his patient's condition during the most demanding anesthetic and surgical procedures and yet allow him wide latitude in the care of other patients in the operating room suite, recovery room and intensive care unit. The nurse anesthetist, in a somewhat parallel position, would be assigned to those tasks of anesthesia that are more related to pain relief, the other broad requirements in anesthesiology involving administration of medications and comfort to the patient. The validation of this new concept, as well as defining the responsibilities of personnel presently available such as the nurse anesthetist, rests with a task analysis of anesthesiology which critically evaluates the individual parts of the work obligation while encompassing the broader aspects of all medical practice. Medical specialization and the formation of allied health professions have largely occurred as opportunistic and pragmatic divisions of medical work without the benefit of critical analysis and planning.

The curriculum for the anesthesia technologist is a 21-month program including nine months of didactic work directed toward two main areas. The first of these is physiology, especially that of respiration, circulatory, and fluid balance, and the second is electronic instrumentation. Basic instruction would be followed by a year of clinical practice including the medical arts as well as the technical aspects of resuscitation and physiological monitoring.

The initial interest in this program with little publicity has been impressive. Acceptance by the medical profession can only be determined when the initial graduates of the program are placed into positions of activity and responsibility. The educational backgrounds of these individuals would fit them into a personnel pattern with a salary range of $12-16,000. The acute and demanding nature of anesthesiology makes it unwise to separate the use of this new type of personnel from the immediate direction of an anesthesiologist. Proper employment of such individuals would improve the quality of patient care and yet extend the hands of the anesthesiologist to care for more critically ill patients.